

REMARKS

This is a full and timely response to the outstanding final Office Action mailed October 17, 2007 (Paper No. 20071001). Upon entry of this response, claims 1-29 are pending in the application. In this response, claims 1, 4-5, 8-10, 12-13, 15-17, and 19-20 have been amended. Claims 21-29 have been added. Applicants respectfully request reconsideration and allowance of all pending claims.

I. Claim Rejections under 35 U.S.C. §102(e)

Claims 1-20 have been rejected under 35 U.S.C. § 102(e) as allegedly anticipated by *Raleigh et al.* (U.S. Patent No. 6,463,096, hereafter "*Raleigh*"). Applicants respectfully traverse this rejection as applied to pending claims 1-20.

It is axiomatic that "[a]nticipation requires the disclosure in a single prior art reference of each element of the claim under consideration." *W. L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983). Therefore, every claimed feature of the claimed invention must be represented in the applied reference to constitute a proper rejection under 35 U.S.C. § 102(e). In the present case, not every feature of the amended claims is represented in the *Raleigh* reference.

A. Independent Claim 1

Applicants' amended claim 1 provides as follows (emphasis added):

A method comprising:

storing a description of a first frame wherein said description comprises:

- (1) a frame length; and
- (2) a first transmission rate;

receiving a first portion of said first frame, said first portion having a first length less than said frame length, said first length based on said first transmission rate;

queuing said first portion of said first frame;

transmitting said first portion of said first frame at said first transmission rate into a shared-communications channel; and

receiving a second portion of said first frame after said transmission of said first portion has started.

Applicants respectfully request that the rejection of independent claim 1 be withdrawn for at least the reason that *Raleigh* fails to disclose, teach, or suggest at least the features recited and emphasized above in claim 1.

1. Storing a description of a first frame

The Office Action appears to allege that "storing a description of a first frame" corresponds to "data extracted from the received MAC packets included MAP" (Office Action, page 2). In particular, the Office Action appears to allege that "a description" corresponds to "center-frequencies, data rates and frame times." However, *Raleigh* teaches that:

[In a radio hub 102,] bandwidth management processor 210 forwards assignments of frequency, data rate, and transmission frame to MAC processor 206 for inclusion in MAC packets to be transmitted downstream. These assignments of center-frequency, data rate, and transmission frame provide the CPEs the information regarding the time-frequency division of the upstream medium. This information is referred to as the MAP.

This MAP information is also forwarded to the radio link supervision processor 208. The radio link supervisor 208 partitions the baseband physical layer processor 202 and the radio converter 204 for proper reception of the upstream according to the MAP information. ...

[In a CPE 104,] MAC processor 318 operates to assemble and disassemble packets conforming to the operant MAC protocol. Much of the data extracted from the received MAC packets is in the form of IP packets which are forwarded to IP router 308. Some of the extracted data

includes the MAP which carries instructions assigning transmission center-frequencies, data rates and frame times. These instructions are forwarded to a radio link supervision processor 320. Radio link supervision processor 320 controls the data rate, transmission times and center-frequencies of operation for baseband physical layer processor 316 and radio converter 314.

(*Raleigh*, col. 5, lines 35-47 and col. 6, lines 10-21). *Raleigh* does not teach **storing** the "data extracted from the received MAC packets." Thus, *Raleigh* fails to disclose or suggest "storing a description of a first frame" as recited in claim 1.

2. Receiving a first portion of said first frame ...

The Office Action cites *Raleigh's* teaching of "**a frame is here is [sic] understood to be a unit of time** for which access to the common transmission medium may be assigned to one or more CPEs" (Office Action, page 2, emphasis added). Thus, the Office Action appears to allege that "receiving a first portion of said first frame wherein the length of said first portion is less than said frame length" corresponds to receiving a first portion of "**a unit of time**." The Office Action further alleges "as shown in figure 4a, frame A, (one full frame), is made of 15 parts labeled CPE this reads on portions of a frame as written in the claim" (Office Action, page 9). However, *Raleigh* teaches that:

FIG. 4A depicts a MAP with frame, data rate and center-frequency assignments according to one embodiment of the present invention. According to the present invention, the spectrum available for downstream communications is divisible in both the frequency and time domains. FIG. 4A shows a series of frames in the time domain. A frame is here understood to be a unit of time for which access to the common transmission medium may be assigned to one or more CPEs 104. ...

In the illustrated example, each CPE 104 may transmit upstream during a given frame ... In an A frame 404, 15 CPEs 1-15 are scheduled to transmit, each transmitting at 2 Mbps at differing center-frequencies. ... Assigning frames such as in FIG. 4A is done by bandwidth management processor 210.

(*Raleigh*, col. 6, line 36 to col. 7, line 13).

Raleigh **does not** disclose assigning different **time portions** of a frame to CPEs. Even assuming, *arguendo*, that a portion of the frequency domain corresponds to a portion of a

frame, *Raleigh* **does not** teach that the portion of the frequency domain has a **time length** at all, much less a time length "less than said frame length." **Nor** does *Raleigh* disclose receiving portions of a "**unit of time**." Thus, *Raleigh* does not teach or suggest "receiving a first portion of said first frame, said first portion having a first length less than said frame length" as recited in claim 1.

The Office Action also appears to allege "a first portion of said first frame" corresponds to the "figure 4a, section 402, RA frame" and "said first frame" corresponds to "figure 4a, Frame A, B, C, D or E" (Office Action, page 2). However, *Raleigh* teaches that "FIG. 4A shows a series of frames in the time domain" (col. 6, lines 40-41). In addition, the Office Action confirms that "frame A, (one full frame), is made of 15 parts labeled CPE" (Office Action, page 9). *Raleigh* teaches that frames B-E are also divided into sets of CPEs (col. 6, line 63 to col. 7, line 5). Thus, RA frame 402 is **not** a portion of Frames A 404, B 406, C 408, D 410, or E 412. Therefore, *Raleigh* does not disclose, teach, or suggest "receiving a first portion of said first frame, said first portion having a first length less than said frame length" as recited in claim 1.

3. Queuing said first portion of said first frame

The Office Action appears to allege that "queuing said first portion of said first frame" corresponds to "processor receives packets from the IP router that are to [sic] directed to the hub and queues them" (Office Action, page 2). However, *Raleigh* teaches that "data ... is in the form of IP packets which are forwarded to IP router 308" (col. 6, lines 12-14).

IP packets to be transmitted are forwarded to MAC processor 318 from transmit priority processor 324. Transmit priority processor 324 receives packets from IP router 308 that are to be directed to hub 102 and queues them in order of priority. ... Transmit priority processor 324 also indicates when data is to be transmitted and the amount of data to be transmitted to queue monitor 322.

(*Raleigh*, col. 6, lines 26-33). This is in contradiction to the Office Action's position that "a frame is ... a unit of time ..." (Office Action, page 2). Even assuming, *arguendo*, that IP packets correspond to frames, *Raleigh* does not teach portions of packets, much less queuing portions

of packets. Thus, *Raleigh* does not disclose or suggest "queuing said first portion of said first frame" as recited in claim 1.

4. ***Transmitting said first portion of said first frame***

The Office Action states that "a request access (RA) frame is where individual CPEs may request to the common transmission medium [sic] ... in an A frame 15 CPEs are scheduled to transmit each 2M Mbps [sic]" (Office Action, page 2). The Office Action appears to allege that this transmission corresponds to "transmitting said first portion of said first frame at said first transmission rate into a shared-communications channel." Even though, *Raleigh* teaches that "A frame is here understood to be a **unit of time** for which access to the common transmission medium may be assigned to one or more CPEs" (col. 6, lines 41-44, emphasis added), *Raleigh* **does not** disclose transmitting portions of a "**unit of time**." Nor, for the same reasons as discussed in section I.A.2 above, is the RA frame a portion of another frame.

Even assuming, *arguendo*, that scheduling a portion of the frequency domain corresponds to transmitting a portion of a frame, *Raleigh* **does not** teach that portions of the frequency domain have a **time length** at all, much less a time length "less than said frame length" as recited in claim 1. As is well established in the law, the Examiner must instead consider the claims as a whole. *Hartness International, Inc. v. Simplimatic Engineering Co.*, 819 F.2d 1100, 2 USPQ2d 1826 (Fed. Cir. 1987) (In determining obviousness, "the inquiry is not whether each element existed in the prior art, but whether the prior art made obvious the invention as a whole for which patentability is claimed"). Thus, *Raleigh* does not teach or suggest "transmitting said first portion of said first frame" as recited in claim 1.

5. ***Receiving a second portion of said first frame ...***

The Office Action appears to allege that "receiving a second portion of said first frame after said transmission of said first portion has started" corresponds to "a request access (RA) frame is where individual CPEs may request to the common transmission medium [sic] ... in an A frame 15 CPEs are scheduled to transmit each 2M Mbps [sic]" (Office Action, page 2). Even

though, *Raleigh* teaches that "A frame is here understood to be a **unit of time** for which access to the common transmission medium may be assigned to one or more CPEs" (col. 6, lines 41-44, emphasis added), *Raleigh* **does not** disclose receiving portions of a "**unit of time**." Nor, for the same reasons as discussed in section I.A.2 above, is the RA frame a portion of another frame. Thus, *Raleigh* does not teach or suggest "receiving a second portion of said first frame."

Even assuming, *arguendo*, that a portion of the frequency domain corresponds to a portion of a frame, *Raleigh* **does not** teach that portions of the frequency domain related to a frame are transmitted at different times. As illustrated in FIGS. 4A and 4B, portions of the frequency domain related to a frame extend over the entire frame time. Thus, *Raleigh* does not teach or suggest "receiving a second portion of said first frame **after** said transmission of said first portion has started" as recited in claim 1.

6. Summary

For at least the reasons described above, *Raleigh* fails to disclose, teach or suggest all of the features recited in claim 1. Therefore, Applicants respectfully submit that the rejection of claim 1 be withdrawn.

B. Dependent Claims 2-4

Because independent claim 1 is allowable over *Raleigh*, Applicants respectfully submit that claims 2-4 are allowable for at least the reason that each depends from an allowable claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1988). Therefore, Applicants respectfully request that the rejection of claims 2-4 be withdrawn.

C. Claim 2

Applicants' claim 2 provides as follows (emphasis added):

The method of claim 1 wherein **said description further comprises** a second transmission rate and **at least one form of modulation**.

Notwithstanding, and in addition to, the arguments discussed above, Applicants respectfully request that the rejection of claim 2 be withdrawn for at least the reason that *Raleigh* fails to disclose, teach, or suggest at least the features recited and emphasized above in claim 2.

As discussed in section I.A.1 above, the Office Action appears to allege that “a description” corresponds to “center-frequencies, data rates and frame times.” In addition, the Office Action appears to allege that “said description further comprises ... at least one form of modulation” corresponds to “any known MAC scheme may be used to control access to the medium in this frame such as CSMA, CSMA/CD etc. When RA frame includes an OFMD burst” (Office Action, pages 2-3). However, *Raleigh* teaches:

The bandwidth management processor 210 forwards assignments of frequency, data rate, and transmission frame to MAC processor 206 for inclusion in MAC packets to be transmitted downstream. These assignments of center-frequency, data rate, and transmission frame provide the CPEs the information regarding the time-frequency division of the upstream medium. This information is referred to as the MAP.

(*Raleigh*, col. 5, lines 34-42). *Raleigh* **does not** teach assigning “forms of modulation” to frames or inclusion of “forms of modulation” in MAC packets. Thus, *Raleigh* fails to disclose or suggest “said description further comprises ... at least one form of modulation” as recited in claim 2. Therefore, Applicants respectfully submit that *Raleigh* does not anticipate dependent claim 2 and respectfully request that the rejection of claim 2 be withdrawn.

D. Claim 4

Applicants' amended claim 4 provides as follows (emphasis added):

The method of claim 1 further comprising ***queuing said second portion of said first frame, said second portion having a second length less than said frame length***, said second length based on said first transmission rate and a time required to receive said second portion.

Notwithstanding, and in addition to, the arguments discussed above, Applicants respectfully request that the rejection of claim 4 be withdrawn for at least the reason that *Raleigh* fails to disclose, teach, or suggest at least the features recited and emphasized above in claim 4.

The Office Action appears to allege that “further comprising queuing said second portion of said first frame wherein the length of said second portion is less than said frame length, and is based on said first transmission rate and the time required to receive said second portion” corresponds to “processor receives packets from the IP router that are to [sic] directed to the hub and queues them” (Office Action, page 2). However, for the same reasons as discussed in section I.A.3 above, *Raleigh does not* teach that an IP packet is a frame (*i.e.*, “**a unit of time**”). Even assuming, *arguendo*, that IP packets correspond to frames, *Raleigh does not* teach portions of packets, much less queuing portions of packets. Thus, *Raleigh* does not disclose or suggest “queuing said second portion of said first frame” as recited in claim 4.

Moreover, for the same reasons as discussed in section I.A.2 above (in reference to “a first portion of said first frame” of claim 1), *Raleigh* does not teach or suggest a “second portion of said first frame, said second portion having a second length less than said frame length.” Thus, *Raleigh* does not disclose, teach, or suggest “queuing said second portion of said first frame, said second portion having a second length less than said frame length” as recited in claim 4. Therefore, Applicants respectfully submit that *Raleigh* does not anticipate dependent claim 4 and respectfully request that the rejection of claim 4 be withdrawn.

E. Independent Claim 5

Applicants’ amended claim 5 provides as follows (emphasis added):

An apparatus comprising:

an interface controller for:

- (1) **receiving a first portion of a first frame;** and
- (2) **receiving a second portion of said first frame;**

a memory for:

- (1) **storing a description of said first frame** wherein said description comprises a frame length and a first transmission rate; and
- (2) **queuing said first portion of said first frame in a queue having a size based on said first transmission rate and a time required to receive said first portion;** and

a transmitter for transmitting said first portion of said first frame at said first transmission rate into a shared communications channel.

Applicants respectfully request that the rejection of independent claim 5 be withdrawn for at least the reason that *Raleigh* fails to disclose, teach, or suggest at least the features recited and emphasized above in claim 5.

1. An interface controller for ... receiving a first portion of a first frame

The Office Action appears to allege that "an interface controller for ... receiving a first portion of a first frame" corresponds to a "MAC processor ... some of the data is extracted including MAP" (Office Action, page 3). As cited by the Office Action, *Raleigh* teaches:

A MAC processor 318 operates to assemble and disassemble packets conforming to the operant MAC protocol. Much of the data extracted from the received MAC packets is in the form of IP packets which are forwarded to IP router 308. Some of the extracted data includes the MAP which carries instructions assigning transmission center-frequencies, data rates and frame times. These instructions are forwarded to a radio link supervision processor 320.

(*Raleigh*, col. 6, lines 9-16). Thus, the Office Action appears to allege that "a first portion of a first frame" corresponds to an "IP packet." However, this is in contradiction to the Office Action's position that "a frame is ... a *unit of time* ..." (Office Action, page 2, emphasis added). IP packets are *not units of time*, much less portions of units of time. Nor, for the same reasons as discussed in section I.A.2 above (in reference to claim 1), is the RA frame a portion of another frame. In addition, *Raleigh* **does not** disclose receiving portions of a "*unit of time*," much less the MAC processor receiving portions of a "*unit of time*." Thus, *Raleigh* does not teach or suggest "an interface controller for ... receiving a first portion of a first frame" as recited in claim 5.

2. An interface controller for ... receiving a second portion of said first frame

The Office Action appears to allege that "an interface controller for ... receiving a second portion of said first frame" corresponds to a "transmit priority processor ... processor receives packets from the IP router that are to be directed to the hub" (Office Action, page 3). *Raleigh* teaches that "IP packets ... are forwarded to IP router 308" (col. 6, line 12-13). Thus, the Office

Action appears to allege that "a second portion of a first frame" corresponds to an "IP packet." However, this is in contradiction to the Office Action's position that "a frame is ... a *unit of time* ..." (Office Action, page 2, emphasis added). IP packets are *not units of time*, much less portions of units of time. *Nor* does *Raleigh* disclose receiving portions of a "*unit of time*," much less the transmit priority processor receiving portions of a "*unit of time*." Thus, *Raleigh* does not teach or suggest "an interface controller for ... receiving a second portion of said first frame" as recited in claim 5.

3. *Memory*

The Office Action appears to allege that "memory" is disclosed in FIG. 3 of *Raleigh*" (Office Action, page 3). However, there exists no indication of "memory" in FIG. 3. Nor is "memory" even mentioned in *Raleigh*. Thus, *Raleigh* does not disclose or suggest "An apparatus comprising ... memory" as recited in claim 5.

4. *Memory for ... storing a description of said first frame*

The Office Action appears to allege that "memory for ... storing a description of said first frame wherein said description comprises a frame length and a first transmission rate" corresponds to a "MAC processor ... data extracted from the received MAC packets included MAP which carries instructions assigning transmission center frequencies, data rates and frame times" (Office Action, page 3). For the same reasons as discussed in section I.A.1 above (in reference to claim 1), *Raleigh* **does not** disclose or suggest "storing a description of a first frame," much less the MAC processor "storing a description of said first frame." *Nor* does *Raleigh* disclose the MAC processor having "memory," much less storing in "memory." Thus, *Raleigh* does not teach or suggest "memory for ... storing a description of said first frame" as recited in claim 5.

5. *Memory for ... queuing said first portion of said first frame ...*

The Office Action appears to allege that "memory for ... queuing said first portion of said first frame wherein the size of said queue is based on said first transmission rate and the time

required to receive said first portion" corresponds to "transmit priority processor indicates when data is to be transmitted and the amount of data to be transmitted to a queue monitor, in response the queue monitor generates access request, [sic] depicts a MAP frame with data rate and center frequency assignments" (Office Action, page 3). For the same reasons as discussed in section I.A.3 above (in reference to claim 1), *Raleigh* **does not** disclose or suggest "queuing said first portion of said first frame," much less the transmit priority processor "queuing said first portion of said first frame." **Nor** does *Raleigh* disclose the transmit priority processor having "memory," much less storing in "memory." Thus, *Raleigh* does not teach or suggest "memory for ... queuing said first portion of said first frame" as recited in claim 5.

In addition, the Office Action alleges that "transmit priority processor indicates when data is to be transmitted and the amount of data to be transmitted to a queue monitor, in response the queue monitor generates access, priority is based on rate and amount, the rate and amount of data is the time required to receive" corresponds to "the size of said queue is based on said first transmission rate and the time required to receive said first portion" (Office Action, page 9). However, one skilled in the art would understand that priority **is not** "the size of said queue." Moreover, even though *Raleigh* teaches that:

A queue monitor 322 originates requests for access to the common transmission medium. ... The requests include the amount and priority of information to be transmitted. ... Transmit priority processor 324 receives packets from IP router 308 that are to be directed to hub 102 and queues them in order of priority. Again, voice and other real-time traffic is given higher priority. Transmit priority processor 324 also indicates when data is to be transmitted and the amount of data to be transmitted to queue monitor 322. It is in response to these inputs that queue monitor 322 generates access requests.

(*Raleigh*, col. 6, lines 22-35), *Raleigh* **does not** disclose "a queue having a size." **Nor** does *Raleigh* teach or suggest what the size of the queue is based on, much less that "a queue having a size based on said first transmission rate" or "a queue having a size based on ... a time required to receive said first portion." Thus, *Raleigh* does not teach or suggest "memory

for ... queuing said first portion of said first frame in a queue having a size based on said first transmission rate and a time required to receive said first portion" as recited in claim 5.

6. Transmitting said first portion of said first frame

For the same reasons as discussed in section I.A.4 above (in reference to claim 1), *Raleigh* does not teach or suggest "transmitting said first portion of said first frame" as recited in claim 5.

7. Summary

For at least the reasons described above, *Raleigh* fails to disclose, teach or suggest all of the features recited in claim 5. Therefore, Applicants respectfully submit that the rejection of claim 5 be withdrawn.

F. Dependent Claims 6-9

Because independent claim 5 is allowable over *Raleigh*, Applicants respectfully submit that claims 6-9 are allowable for at least the reason that each depends from an allowable claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1988). Therefore, Applicants respectfully request that the rejection of claims 6-9 be withdrawn.

G. Claim 6

Applicants' claim 6 provides as follows (emphasis added):

The apparatus of claim 5 wherein ***said description further comprises*** a second transmission rate and ***at least one form of modulation***.

Notwithstanding, and in addition to, the arguments discussed above, Applicants respectfully request that the rejection of claim 6 be withdrawn for at least the reason that *Raleigh* fails to disclose, teach, or suggest at least the features recited and emphasized above in claim 6.

As discussed in section I.A.1 above, the Office Action appears to allege that "a description" corresponds to "center-frequencies, data rates and frame times." In addition, the Office Action appears to allege that "said description further comprises ... at least one form of modulation" corresponds to "ant [s/c] known MAC scheme may be used to control access to the

medium in this frame such as CSMA, When RA frame includes OFMD" (Office Action, page 4). However, for the same reasons as discussed in section I.C above (in reference to claim 2), *Raleigh* does not disclose or suggest "said description further comprises ... at least one form of modulation" as recited in claim 6. Therefore, Applicants respectfully submit that *Raleigh* does not anticipate dependent claim 6 and respectfully request that the rejection of claim 6 be withdrawn.

H. Claim 8

Applicants' amended claim 8 provides as follows (emphasis added):

The apparatus of claim 5 wherein ***said memory is also for queuing said second portion of said first frame, said second portion having a length less than said frame length***, said length based on said first transmission rate and a time required to receive said second portion.

Notwithstanding, and in addition to, the arguments discussed above, Applicants respectfully request that the rejection of claim 8 be withdrawn for at least the reason that *Raleigh* fails to disclose, teach, or suggest at least the features recited and emphasized above in claim 8.

The Office Action cites *Raleigh's* teaching of "***a frame is understood to be a unit of time*** for which access to the common transmission medium may be assigned to one or more CPEs, see figure 4a" (Office Action, page 4, emphasis added). Thus, the Office Action appears to allege that "queuing said second portion of said first frame wherein the length of said second portion is less than said frame length" corresponds to queuing a first portion of "***a unit of time.***" The Office Action further alleges "as shown in figure 4a, frame A, (one full frame), is made of 15 parts labeled CPE this reads on portions of a frame as written in the claim" (Office Action, page 9). However, as cited by the Office Action, *Raleigh* teaches that:

FIG. 4A shows a series of frames in the time domain. A frame is here understood to be a unit of time for which access to the common transmission medium may be assigned to one or more CPEs 104. A request access (RA) frame 402 is where individual CPEs may request access to the common transmission medium.

(*Raleigh*, col. 6, lines 41-46). *Raleigh does not* disclose assigning different **time portions** of a frame to CPEs. Even assuming, *arguendo*, that a portion of the frequency domain corresponds to a portion of a frame, *Raleigh does not* teach that the portion of the frequency domain has a **time length** at all, much less a time length "less than said frame length." Furthermore, even assuming, *arguendo*, that "a series of frames in the time domain" corresponds to queuing frames, *Raleigh does not* disclose queuing **portions of a "unit of time."** Thus, *Raleigh* does not teach or suggest "queuing said second portion of said first frame, said second portion having a length less than said frame length."

Additionally, for the same reasons as discussed in section I.E.5 above (in reference to "memory for ... queuing said first portion of said first frame ..." of claim 5), *Raleigh does not* teach or suggest "said memory is also for queuing said second portion of said first frame" as recited in claim 8. Thus, *Raleigh* does not disclose, teach, or suggest "said memory is also for queuing said second portion of said first frame, said second portion having a length less than said frame length" as recited in claim 8. Therefore, Applicants respectfully submit that *Raleigh* does not anticipate dependent claim 8 and respectfully request that the rejection of claim 8 be withdrawn.

I. Independent Claim 10

Applicants' amended claim 10 provides as follows (emphasis added):

A method comprising:

storing a first description wherein said first description comprises:

(1) a first frame length; and

(2) a first transmission rate;

transmitting a queued portion of a first frame at said first transmission rate into a shared-communications channel;

removing said queued portion of said first frame wherein said removal is based on said first frame length;

storing a second description wherein said second description comprises:

(1) a second frame length; and

(2) a second transmission rate;

queuing a first portion of a second frame, said first portion having a first length less than said second frame length, said first length based on said first transmission rate; and

transmitting said first portion of said second frame at said second transmission rate into said shared-communications channel.

Applicants respectfully request that the rejection of independent claim 10 be withdrawn for at least the reason that *Raleigh* fails to disclose, teach, or suggest at least the features recited and emphasized above in claim 10.

1. Storing a first description / storing a second description

The Office Action appears to allege that "storing a first description" and "storing a second description" correspond to "data extracted from the received MAC packets included MAP" (Office Action, pages 4 and 5). In particular, the Office Action appears to allege that "a description" corresponds to "center-frequencies, data rates and frame times." However, *Raleigh* teaches that:

[In a radio hub 102,] bandwidth management processor 210 forwards assignments of frequency, data rate, and transmission frame to MAC processor 206 for inclusion in MAC packets to be transmitted downstream. These assignments of center-frequency, data rate, and transmission frame provide the CPEs the information regarding the time-frequency division of the upstream medium. This information is referred to as the MAP.

This MAP information is also forwarded to the radio link supervision processor 208. The radio link supervisor 208 partitions the baseband

physical layer processor 202 and the radio converter 204 for proper reception of the upstream according to the MAP information. ...

[In a CPE 104,] MAC processor 318 operates to assemble and disassemble packets conforming to the operant MAC protocol. Much of the data extracted from the received MAC packets is in the form of IP packets which are forwarded to IP router 308. Some of the extracted data includes the MAP which carries instructions assigning transmission center-frequencies, data rates and frame times. These instructions are forwarded to a radio link supervision processor 320. Radio link supervision processor 320 controls the data rate, transmission times and center-frequencies of operation for baseband physical layer processor 316 and radio converter 314.

(*Raleigh*, col. 5, lines 35-47 and col. 6, lines 10-21). *Raleigh* does not teach **storing** the “data extracted from the received MAC packets.” Thus, *Raleigh* fails to disclose or suggest either “storing a first description” or “storing a second description” as recited in claim 10.

2. Transmitting a queued portion of a first frame

The Office Action states that “a request access (RA) frame is where individual CPEs may request to the common transmission medium [sic] ... in an A frame 15 CPEs are scheduled to transmit each 2M Mbps [sic]” (Office Action, page 4). The Office Action appears to allege that this transmission corresponds to “transmitting a queued portion of a first frame at said first transmission rate into a shared-communications channel.” Even though, *Raleigh* teaches that “A frame is here understood to be a **unit of time** for which access to the common transmission medium may be assigned to one or more CPEs” (col. 6, lines 41-44, emphasis added), *Raleigh* **does not** disclose transmitting portions of a “**unit of time**.” Nor, for the same reasons as discussed in section I.A.2 above, is the RA frame a portion of another frame. Additionally, for the same reasons as discussed in section I.H above (in reference to claim 8), *Raleigh* **does not** disclose queuing **portions of a “unit of time.”** Thus, *Raleigh* does not teach or suggest “transmitting a queued portion of a first frame” as recited in claim 10.

3. Queuing a first portion of a second frame ...

The Office Action appears to allege that “queuing a first portion of a second frame” corresponds to “processor receives packets from the IP router that are to [sic] directed to the

hub and queues them" (Office Action, page 5). However, *Raleigh* teaches that "data ... is in the form of IP packets which are forwarded to IP router 308" (col. 6, lines 12-14). This is in contradiction to the Office Action's position that *Raleigh* teaches "**a frame is understood to be a unit of time** for which access to the common transmission medium may be assigned to one or more CPEs" (Office Action, page 4, emphasis added). Even assuming, *arguendo*, that IP packets correspond to frames, *Raleigh* **does not** teach portions of packets, much less queuing portions of packets. Thus, *Raleigh* does not disclose or suggest "queuing a first portion of a second frame."

The Office Action further alleges "as shown in figure 4a, that frame A, (one full frame), is made of 15 parts labeled CPE this reads on portions of a frame as written in the claim" (Office Action, page 10). Thus, the Office Action appears to alternatively allege that "queuing a first portion of a second frame wherein the length of said first portion is less than said second frame length" corresponds to queuing a first portion of "**a unit of time.**" However, for the same reasons as discussed in section I.H above (in reference to claim 8), *Raleigh* **does not** disclose queuing **portions of a "unit of time."** Thus, *Raleigh* does not teach or suggest "queuing a first portion of a second frame, said first portion having a first length less than said second frame length" as recited in claim 10.

4. Transmitting said first portion of said second frame

The Office Action states that "a request access (RA) frame is where individual CPEs may request to the common transmission medium [sic] ... in an A frame 15 CPEs are scheduled to transmit each 2M Mbps [sic]" (Office Action, page 5). The Office Action appears to allege that this transmission corresponds to "transmitting said first portion of said second frame at said second transmission rate into said shared-communications channel." For the same reasons as discussed in section I.A.4 above (in reference to "transmitting said first portion of said first frame" of claim 1), *Raleigh* does not teach or suggest "transmitting said first portion of said second frame" as recited in claim 10.

5. Summary

For at least the reasons described above, *Raleigh* fails to disclose, teach or suggest all of the features recited in claim 10. Therefore, Applicants respectfully submit that the rejection of claim 10 be withdrawn.

J. Dependent Claims 11-12

Because independent claim 10 is allowable over *Raleigh*, Applicants respectfully submit that claims 11-12 are allowable for at least the reason that each depends from an allowable claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1988). Therefore, Applicants respectfully request that the rejection of claims 11-12 be withdrawn.

K. Claim 12

Applicants' amended claim 12 provides as follows (emphasis added):

The method of claim 10 further comprising ***queuing a second portion of said second frame, said second portion having a second length less than said second frame length***, said second length based on said second transmission rate.

Notwithstanding, and in addition to, the arguments discussed above, Applicants respectfully request that the rejection of claim 12 be withdrawn for at least the reason that *Raleigh* fails to disclose, teach, or suggest at least the features recited and emphasized above in claim 12.

The Office Action states that "in a E frame a single CPE9 occupies the entire upstream spectrum. Thus [many] CPEs may simultaneously transmit at low data rate source or one CPE may transmit at a high data rate" (Office Action, page 5). The Office Action appears to allege that this transmission corresponds to "queuing a second portion of said second frame wherein the length of said second portion is less than said second frame length." For the same reasons as discussed in section I.H above (in reference to "queuing said second portion of said first frame ..." of claim 8), *Raleigh* does not teach or suggest "queuing a second portion of said second frame, said second portion having a second length less than said second frame length"

as recited in claim 12. Therefore, Applicants respectfully submit that *Raleigh* does not anticipate dependent claim and respectfully request that the rejection of claim 12 be withdrawn.

L. Independent Claim 13

Applicants' amended claim 5 provides as follows (emphasis added):

An apparatus comprising:

a memory for:

(1) **storing a first description** wherein said first description comprises a first frame length and a first transmission rate;

(2) **storing a second description** wherein said second description comprises a second frame length and a second transmission rate; and

(3) **queuing a first portion of a second frame, said first portion having a first length less than said second frame length**, said first length based on said first transmission rate;

a transmitter for:

(1) **transmitting a queued portion of a first frame** at said first transmission rate into a shared-communications channel; and

(2) **transmitting said first portion of said second frame** at said second transmission rate into said shared communications channel; and

a processor for removing said first description and said queued portion of said first frame wherein said removal is based on said first frame length.

Applicants respectfully request that the rejection of independent claim 13 be withdrawn for at least the reason that *Raleigh* fails to disclose, teach, or suggest at least the features recited and emphasized above in claim 13.

1. Memory

The Office Action appears to allege that "memory" is disclosed in FIG. 3 of *Raleigh*" (Office Action, page 3). However, there exists no indication of "memory" in FIG. 3. Nor is "memory" even mentioned in *Raleigh*. Thus, *Raleigh* does not disclose or suggest an "apparatus comprising ... memory" as recited in claim 13.

2. Memory for ... storing a first description ... storing a second description

The Office Action appears to allege that "memory for ... storing a first description wherein said first description comprises a first frame length and a first transmission rate" and

"memory for ... storing a second description wherein said second description comprises a second frame length and a second transmission rate" correspond to a "MAC processor ... data extracted from the received MAC packets included MAP which carries instructions assigning transmission center frequencies, data rates and frame times" (Office Action, page 6). For the same reasons as discussed in section I.A.1 above (in reference to claim 1), *Raleigh does not* disclose or suggest "storing a description of a first frame," much less the MAC processor "storing a description of said first frame." *Nor* does *Raleigh* disclose the MAC processor having "memory," much less storing in "memory." Thus, *Raleigh* does not teach or suggest either "memory for ... storing a first description wherein said first description comprises a first frame length and a first transmission rate" or "memory for ... storing a second description wherein said second description comprises a second frame length and a second transmission rate" as recited in claim 13.

3. *Memory for ... queuing a first portion of a second frame ...*

The Office Action appears to allege that "memory for ... queuing a first portion of a second frame wherein the length of said first portion is less than said second frame length and is based on said first transmission rate" corresponds to "[FIG. 4A] depicts a MAP frame with data rate and center frequency assignments ... Frame a is divided into 15 parts each part is less than the total frame length, frame A makes up the sum of all 15 portions" (Office Action, page 6). The Office Action further alleges "as shown in figure 4a, that frame A, (one full frame), is made of 15 parts labeled CPE this reads on portions of a frame as written in the claim" (Office Action, page 10). For the same reasons as discussed in section I.A.3 above (in reference to "queuing said first portion of said first frame" of claim 1), *Raleigh does not* disclose or suggest "queuing a first portion of a second frame." *Nor* does *Raleigh* disclose the transmit priority processor having "memory," much less storing in "memory." Thus, *Raleigh* does not teach or suggest "memory for ... queuing said first portion of said first frame" as recited in claim 5. Moreover, for the same reasons as discussed in section I.H above (in reference to "said memory is also for

queuing said second portion of said first frame ..." of claim 8), *Raleigh* does not disclose, teach, or suggest "memory for ... queuing a first portion of a second frame wherein the length of said first portion is less than said second frame length" as recited in claim 13.

4. *Transmitting a queued portion of a first frame*

The Office Action states that "a request access (RA) frame is where individual CPEs may request to the common transmission medium [sic] ... in an A frame 15 CPEs are scheduled to transmit each 2M Mbps [sic]" (Office Action, page 6). The Office Action appears to allege that this transmission corresponds to "transmitting a queued portion of a first frame at said first transmission rate into a shared-communications channel." For the same reasons as discussed in section I.I.2 above (in reference to claim 10), *Raleigh* does not teach or suggest "transmitting a queued portion of a first frame" as recited in claim 13.

5. *Transmitting said first portion of said second frame*

The Office Action states that "in an E frame a single CPE9 occupies the entire upstream spectrum. Thus [many] CPEs may simultaneously transmit at low data rate source or one CPE may transmit at a high data rate" (Office Action, page 6). The Office Action appears to allege that this transmission corresponds to "transmitting said first portion of said second frame at said second transmission rate into said shared communications channel." For the same reasons as discussed in section I.A.4 above (in reference to "transmitting said first portion of said first frame" of claim 1), *Raleigh* does not teach or suggest "transmitting said first portion of said second frame" as recited in claim 13.

6. *Summary*

For at least the reasons described above, *Raleigh* fails to disclose, teach or suggest all of the features recited in claim 13. Therefore, Applicants respectfully submit that the rejection of claim 13 be withdrawn.

M. Dependent Claims 14-16

Because independent claim 13 is allowable over *Raleigh*, Applicants respectfully submit that claims 14-16 are allowable for at least the reason that each depends from an allowable claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1988). Therefore, Applicants respectfully request that the rejection of claims 14-16 be withdrawn.

N. Claim 15

Applicants' amended claim 15 provides as follows (emphasis added):

The apparatus of claim 13 wherein ***said memory is also for queuing a second portion of said second frame, said second portion having a second length less than said second frame length***, said second length based on said second transmission rate.

Notwithstanding, and in addition to, the arguments discussed above, Applicants respectfully request that the rejection of claim 15 be withdrawn for at least the reason that *Raleigh* fails to disclose, teach, or suggest at least the features recited and emphasized above in claim 15.

The Office Action appears to allege that "queuing a second portion of said second frame" corresponds to "processor receives packets from the IP router that are to [sic] directed to the hub and queues them" (Office Action, page 7). However, *Raleigh* teaches that "data ... is in the form of IP packets which are forwarded to IP router 308" (col. 6, lines 12-14). This is in contradiction to the Office Action's position that *Raleigh* teaches "***a frame is understood to be a unit of time*** for which access to the common transmission medium may be assigned to one or more CPEs" (Office Action, page 4, emphasis added). Even assuming, *arguendo*, that IP packets correspond to frames, *Raleigh* ***does not*** teach portions of packets, much less queuing portions of packets. Thus, *Raleigh* does not disclose or suggest "queuing a second portion of said second frame."

The Office Action further states that "in a E frame a single CPE9 occupies the entire upstream spectrum. Thus [many] CPEs may simultaneously transmit at low data rate source or one CPE may transmit at a high data rate" (Office Action, page). Thus, the Office Action

appears to alternatively allege that "queuing a second portion of said second frame wherein the length of said second portion is less than said second frame length" corresponds to queuing a second portion of "**a unit of time.**" However, for the same reasons as discussed in section I.H above (in reference to claim 8), *Raleigh* **does not** disclose queuing **portions of a "unit of time."** Thus, *Raleigh* does not teach or suggest "queuing a second portion of said second frame, said second portion having a second length less than said second frame length" as recited in claim 15.

Additionally, for the same reasons as discussed in section I.E.5 above (in reference to "memory for ... queuing said first portion of said first frame ..." of claim 5), *Raleigh* does not teach or suggest "said memory is also for queuing a second portion of said second frame" as recited in claim 15. Thus, *Raleigh* does not disclose, teach, or suggest "said memory is also for queuing a second portion of said second frame, said second portion having a second length less than said second frame length" as recited in claim 15. Therefore, Applicants respectfully submit that *Raleigh* does not anticipate dependent claim and respectfully request that the rejection of claim 15 be withdrawn.

O. Independent Claim 17

Applicants' amended claim 17 provides as follows (emphasis added):

A method comprising:

storing a first description of a first frame wherein said first description comprises:

- (1) a first frame length;
- (2) a first transmission rate; and
- (3) a first class of service associated with said first frame;

queuing a first portion of said first frame in a first queue **wherein said first portion of said first frame comprises m octets**, wherein m is a positive integer with a value based on said first transmission rate;

transmitting said first portion of said first frame at said first transmission rate into a shared-communications channel;

receiving a second portion of said first frame after said transmission of said first portion has started;

storing a second description of a second frame after said storing of said first description wherein said second description comprises:

- (1) a second frame length;
- (2) a second transmission rate; and
- (2) a second class of service associated with said second frame;

queuing a portion of said second frame wherein said portion of said second frame comprises n octets, wherein n is a positive integer with a value based on said second transmission rate; and

transmitting said portion of said second frame at said second transmission rate into said shared-communications channel.

Applicants respectfully request that the rejection of independent claim 17 be withdrawn for at least the reason that *Raleigh* fails to disclose, teach, or suggest at least the features recited and emphasized above in claim 17.

1. Storing a first description of a first frame / storing a second description of a second frame

The Office Action appears to allege that "storing a first description of a first frame" and "storing a second description of a second frame" correspond to "data extracted from the received MAC packets included MAP" (Office Action, pages 7 and 8). In particular, the Office Action appears to allege that "a description" corresponds to "center-frequencies, data rates and frame times." However, *Raleigh* teaches that:

A MAC processor 318 operates to assemble and disassemble packets conforming to the operant MAC protocol. Much of the data extracted from the received MAC packets is in the form of IP packets which are forwarded to IP router 308. Some of the extracted data includes the MAP

which carries instructions assigning transmission center-frequencies, data rates and frame times. These instructions are forwarded to a radio link supervision processor 320. Radio link supervision processor 320 controls the data rate, transmission times and center-frequencies of operation for baseband physical layer processor 316 and radio converter 314.

(*Raleigh*, col. 6, lines 10-21). *Raleigh* does not teach **storing** the "data extracted from the received MAC packets." Thus, *Raleigh* fails to disclose or suggest either "storing a first description of a first frame" or "storing a second description of a second frame" as recited in claim 17.

2. Queuing a first portion of said first frame ... / queuing a portion of said second frame ...

The Office Action appears to allege that "queuing a first portion of said first frame in a first queue" and "queuing a portion of said second frame" correspond to "processor receives packets from the IP router that are to [sic] directed to the hub and queues them" (Office Action, pages 7 and 8). However, *Raleigh* teaches that "data ... is in the form of IP packets which are forwarded to IP router 308" (col. 6, lines 12-14). This is in contradiction to the Office Action's position that *Raleigh* teaches "**a frame is understood to be a unit of time** for which access to the common transmission medium may be assigned to one or more CPEs" (Office Action, page 4, emphasis added). Even assuming, *arguendo*, that IP packets correspond to frames, *Raleigh* **does not** teach portions of packets, much less queuing portions of packets. Thus, *Raleigh* does not disclose or suggest "queuing a first portion of said first frame in a first queue" or "queuing a portion of said second frame" as recited in claim 17.

The Office Action further states that the "Raleigh et al invention is address-transmitting bytes of data and voice packets, which read on the frame comprises m octets (bytes)" (Office Action, page 10). This also contradicts the Office Action's position that *Raleigh* teaches "**a frame is understood to be a unit of time ...**" (Office Action, page 4, emphasis added). One skilled in the art would understand that frames, as understood in *Raleigh*, are **not** measured in octets (bytes), but rather in **increments of time**. Thus, *Raleigh* does not teach or suggest

"queuing a first portion of said first frame in a first queue wherein said first portion of said first frame comprises *m* octets " or "queuing a portion of said second frame wherein said portion of said second frame comprises *n* octets" as recited in claim 17.

3. *Transmitting said first portion of said first frame / transmitting said portion of said second frame*

The Office Action states that "a request access (RA) frame is where individual CPEs may request to the common transmission medium [*sic*] ... in an A frame 15 CPEs are scheduled to transmit each 2M Mbps [*sic*]" (Office Action, pages 7 and 8). The Office Action appears to allege that this transmission corresponds to "transmitting said first portion of said first frame at said first transmission rate into a shared-communications channel" and "transmitting said portion of said second frame at said second transmission rate into said shared-communications channel." Even though, *Raleigh* teaches that "A frame is here understood to be a *unit of time* for which access to the common transmission medium may be assigned to one or more CPEs" (col. 6, lines 41-44, emphasis added), *Raleigh does not* disclose transmitting portions of a "*unit of time*." Nor, for the same reasons as discussed in section I.A.2 above (in reference to claim 1), is the RA frame a portion of another frame. Additionally, for the same reasons as discussed in section I.H above (in reference to claim 8), *Raleigh does not* disclose queuing *portions of a "unit of time."* Thus, *Raleigh* does not teach or suggest "transmitting said first portion of said first frame at said first transmission rate into a shared-communications channel" or "transmitting said portion of said second frame at said second transmission rate into said shared-communications channel" as recited in claim 17.

4. *Receiving a second portion of said first frame ...*

The Office Action appears to allege that "receiving a second portion of said first frame after said transmission of said first portion has started" corresponds to "a request access (RA) frame is where individual CPEs may request to the common transmission medium [*sic*] ... in an A frame 15 CPEs are scheduled to transmit each 2M Mbps [*sic*]" (Office Action, pages 7-8). For

the same reasons as discussed in section I.A.5 above (in reference to claim 1), *Raleigh* does not teach or suggest "receiving a second portion of said first frame after said transmission of said first portion has started" as recited in claim 17.

5. Summary

For at least the reasons described above, *Raleigh* fails to disclose, teach or suggest all of the features recited in claim 17. Therefore, Applicants respectfully submit that the rejection of claim 17 be withdrawn.

P. Dependent Claims 18-20

Because independent claim 17 is allowable over *Raleigh*, Applicants respectfully submit that claims 18-20 are allowable for at least the reason that each depends from an allowable claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1988). Therefore, Applicants respectfully request that the rejection of claims 18-20 be withdrawn.

Q. Claim 19

Applicants' amended claim 19 provides as follows (emphasis added):

The method of claim 17 further comprising ***queuing a second portion of said second frame, said second portion having a length less than said second frame length***, said length based on said second transmission rate.

Notwithstanding, and in addition to, the arguments discussed above, Applicants respectfully request that the rejection of claim 19 be withdrawn for at least the reason that *Raleigh* fails to disclose, teach, or suggest at least the features recited and emphasized above in claim 19.

The Office Action states that "CPE may transmit upstream at a given frame at either a 2Mbps, a 30Mbps data rate [*sic*]" (Office Action, page 8). The Office Action appears to allege that this transmission corresponds to "queuing a second portion of said second frame wherein the length of said second portion is less than said second frame length." For the same reasons as discussed in section I.H above (in reference to "queuing said second portion of said first frame ..." of claim 8), *Raleigh* does not teach or suggest "queuing a second portion of said

second frame, said second portion having a length less than said second frame length" as recited in claim 19. Therefore, Applicants respectfully submit that *Raleigh* does not anticipate dependent claim and respectfully request that the rejection of claim 19 be withdrawn.

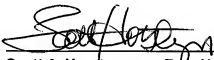
II. Newly Added Claims

New claims 21-29 are based on subject matter that is explicit and/or inherent within the description of the specification and/or the drawings. Applicants submit that no new matter has been added in the new claims 21-29, and that new claims 21-29 are allowable over the cited references. Therefore, Applicants request the Examiner to enter and allow the above new claim.

CONCLUSION

Applicants respectfully request that all outstanding objections and rejections be withdrawn and that this application and presently pending claims 1-29 be allowed to issue. Any statements in the Office Action that are not explicitly addressed herein are not intended to be admitted. In addition, any and all findings of inherency are traversed as not having been shown to be necessarily present. Furthermore, any and all findings of well-known art and official notice, or statements interpreted similarly, should not be considered well known since the Office Action does not include specific factual findings predicated on sound technical and scientific reasoning to support such conclusions. If the Examiner has any questions or comments regarding Applicants' response, the Examiner is encouraged to telephone Applicants' undersigned counsel.

Respectfully submitted,

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